

REMARKS

Claims 1-25 are currently pending in the application. In an Office Action dated February 28, 2005 ("Office Action"), the Examiner rejected claims 1, 6, 10, 11, 12, 19, and 20 under 35 USC. § 103(a) as being unpatentable over Lopatin et al., U.S. Patent No. 6,838,720 B2 ("Lopatin"), Buynoski et al., U.S. Patent No. 6,852,586 B1, Oglesby et al., U.S. Patent No. 6,656,763 B1 ("Oglesby"), or Krieger et al., U.S. Patent No. 6,838,720, and rejected claim 14 as being unpatentable over Speakman, U.S. Patent No. 6,503,831 ("Speakman"). Applicants' representative has amended claim 1, in the above amendment, to more particularly point out and distinctly claim that which Applicants regard as their invention. Applicants' representative believes that amended claims 1 and claims 2-11 that depend from amended claim 1 are not obvious in view of the cited references, for reasons provided below. Applicants' representative respectfully traverses the 35 USC § 103(a) rejections of claims 12, 14, and 19-20 for reasons provided below.

The Examiner has cited Lopatin, Buynoski, Oglesby, and Krieger as teaching organic polymer memories, with specific reference in each case to one or two figures that show a memory cell with particular structures, and with a general statement, without specific reference to any particular portion of the cited references, that all of the references mention WRITE and READ operations with threshold voltage levels and durations. However, as amended, claim 1 reads:

1. An organic polymer memory element stable to repeated WRITE and READ operations, the organic polymer memory element comprising:
 - a first electrode;
 - a second electrode;
 - a conductive organic polymer layer between the first electrode and the second electrode, the conductivity of which detectably decreases following introduction of electrons under applied voltage potential;
 - the memory element repeatedly written by application of a WRITE threshold to place the organic polymer layer into a first conductivity state, the WRITE threshold one of
 - a relatively high-voltage voltage potential, and
 - a relatively long-duration voltage potential; and
 - the memory element repeatedly read by application of a READ threshold to place the organic polymer layer into a second conductivity state, the READ threshold a relatively low voltage potential for a length of time less than a time needed for electrons to enter the organic polymer layer following application of a voltage potential to the electrodes.

Claim 1 is directed to a memory cell fabricated from an organic polymer layer that is stable to repeated WRITE and READ operations due to applying appropriate voltages during READ and WRITE operations to prevent introduction of electrons into the organic polymer layer. None of the cited references teach, mention, or suggest such a stable memory cell. None of the cited references teach, mention, or suggest instability problems of organic-polymer resistive elements or solutions for those instability problems. The Examiner had conditionally allowed original claims 2 and 3, and since amended claim 1 includes language from those original claims, Applicants' representative believes that the Examiner should now find claim 1, and claims 2-11 that depend from claim 1, to be allowable.

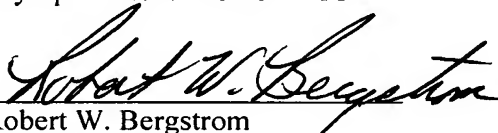
Applicants' representative respectfully observes that the Examiner seems not to have specifically addressed claim 12 in the Office Action. Claim 12 is directed to a method that includes the element: "determining a threshold the length of application of a relatively low voltage potential to the memory element during which no electrons are injected into the organic polymer layer." Applicants' representative can find no teaching, mention, or suggestion in the cited references for this element, and therefore believes that claims 12-13 are not obvious in view of the cited references. With respect to claim 19, Applicants' representative respectfully observes that the Examiner has not pointed to an electron-blocking means in any of the references cited in the rejection of claim 19. A hole-injection layer is not an electron-blocking layer. For example, *p*-doped silicon may be used as a hole-injection layer, but *p*-doped silicon is not generally considered to be an electron blocking layer. Therefore, Applicants' representative believes that claims 19-20 are not obvious in view of any of the cited references.

Finally, with respect to the rejection of claim 14, Applicants' representative observes that claim 14 recites: introducing an additional electron blocking layer between an electrode and the organic polymer layer comprising the identified electron-blocking substance. The cited portion of Speakman is a single sentence stating that polymeric material, apparently used for droplets in a droplet-based method of manufacture, may comprise one of PTFE, PMMA, and polyaniline *containing* a suitable electron-injection barrier material. It is not clear exactly to Applicants' representative whether or not Speakman, in describing the manufacturing

method, discloses a memory cell stable to read and write operations, but the cited sentence discusses including material in a polymeric droplet, and not an additional electron blocking layer between an electrode and an organic polymer layer, as claimed in claim 14. Thus, Applicants' representative believes that claim 14 is not obvious in view of Speakman.

In Applicant's representative's opinion, all of the claims remaining in the current application are clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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